

S/020/63/149/003/027/028  
B192/B102

AUTHORS: Popel', A. A., Dautov, R. A., Bakharov, A. V.

TITLE: Influence of the symmetry of a paramagnetic complex on the proton relaxation time

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 3, 1963, 637-638

TEXT: The pH dependence of the transverse proton relaxation time,  $T_2$ , was measured for aqueous solutions of halides and nitrates of copper, cobalt, nickel, iron, manganese and chromium. With copper bromide solutions (ion concentration 0.4 mol) a rapid decrease from 4.5 to 2 seconds followed for  $T_2$  if the pH increased from 0.5 to 3. It is assumed that this effect is caused by a decrease in the symmetry of the complex entailing an increase of the relaxation effect of the copper ions. The assumption was confirmed by measurements of the effective g-factor of the  $\text{Cu}^{2+}$  ions: For the  $-\lg(\text{H}^+)$  values -0.35, 0.0 and 1.85  $g_{\text{eff}}$  2.177, 2.181, and 2.188 was derived. Also the change in the color of the solution from blue to brownish yellow indicates a change in the

Influence of the symmetry of a ...

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symmetry of the complex. A similar decrease of  $T_2$ , if pH increased from 1.5 to 3, was observed for  $CrCl_3$  solutions with the color of the solution shading from violet into green. For chromium nitrate and copper nitrate no decrease of  $T_2$  with increasing pH was derived. It is assumed that the change of symmetry is due to the formation of hydroxide-halide complexes. For the  $MnCl_2$  solutions no decrease of  $T_2$  was derived, in agreement with theoretical considerations. There are 3 figures.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

PRESENTED: November 5, 1962, by B. A. Arbuzov, Academician

SUBMITTED: October 31, 1962

Card 2/2

ACCESSION NR: AP4013518

S/0181/64/006/002/0529/0532

AUTHORS: Akhmedov, A. G.; Dautov, R. A.

TITLE: Relaxation and spin diffusion of the F19 isotope in calcium fluoride

SOURCE: Fizika tverdogo tela, v. 6, no. 2, 1964, 529-532

TOPIC TAGS: nuclear relaxation, spin diffusion, spin lattice relaxation, fluorite, fluorine, spectrometer, calcium fluoride

ABSTRACT: Experiments were made on single crystals of  $\text{CaF}_2$  rotated about the  $[110]$  axis. Signals of free induction and spin echo were observed on a single-coil spectrometer with nuclear magnetic resonance at a frequency of F19 of 13.2 megacycles. The relaxation time of F19 was determined from amplitude attenuation of the echo signal while changing the crystal holder between 90 and 180° radio-frequency pulses of 6 and 12 microseconds duration. The angular dependence of this relaxation time is shown graphically in Fig. 1 on the Enclosure. The anisotropy of the relaxation time is clearly shown. From measurements of this time, the wavelength, and the internuclear distance, the coefficient of spin diffusion may be

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ACCESSION NR: AP4013518

computed. It was found that two regions of transition to magnetization equilibrium exist. "The authors express their thanks to V. M. Vinokurov for supplying samples and for contributing valuable advice." Orig. art. has: 3 figures and 3 formulas.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina  
(Kazan State University)

SUBMITTED: 09Sep63

DATE ACQ: 03Mar64

ENCL: 01

SUB CODE: SS, EC

NO REF SOV: 001

OTHER: 007

Card 2/3

L 49034-65 BW(1)/EEO(h)-2/EEO(t) PI-4 IJP(e) RM/R

ACCESSION NR: AP5006906

8/0131/65/007/003/0915/0917

AUTHOR: Akhmedov, A. G.; Dautov, R. A.

TITLE: Double nuclear resonance with the hyperfine levels of paramagnetic ions and  $F19$  nuclei in  $CaF_2$ 

SOURCE: Fizika tverdogo tela, v. 7, no. 3, 1965, 915-917

TOPIC TAGS: double nuclear resonance, hyperfine level, paramagnetic ion, paramagnetic center, fluorite, spin echo

ABSTRACT: The authors were interested in double resonance in crystals with paramagnetic centers, with dipole-dipole interaction between the paramagnetic center and the surrounding nuclei. This choice was partially due to the fact that in a large constant magnetic field the quantization axis of such a system coincides with the direction of the field, and because a transition between two hyperfine levels of the paramagnetic centers is of interest in itself. A pulsed (spin-echo) method was used for this purpose. The experiment was performed with  $CaF_2$  single crystals doped with  $Mn^{2+}$  and  $Eu^{2+}$ . A second frequency, corresponding to the transition between hyperfine levels of the paramagnetic centers, was applied to

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L 49034-65

ACCESSION NR: AP5006906

the sample continuously or in pulses. The resonance in the second spin system was determined from the changes in the amplitudes of the spin-echo signal of the  $F19$  nuclei. Information on the splitting and relaxation parameters of the spins systems in question could be obtained from the dependence of the change in the echo signals of the  $F19$  nuclei on the frequency and amplitude of the applied radio-frequency field ( $\sim 460.2$  Mcs). It is concluded that the method can also yield information on the frequencies of the hyperfine transitions of the paramagnetic centers and the connection between the paramagnetic centers and the main nuclei of the lattice. Orig. art. has: 1 figure.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina  
(Kazan' State University)

SUBMITTED: 24 Sep 64

ENCL: 00

SUB CODE: SS, NP

NR REI SOV: 000

OTHER: 003

Card 2/2

L 25478-66 EEC(k)-2/EWN(k)/EWI(1)/I IJP(c) WG

ACC NR: AF6009674

SOURCE CODE: UR/0181/66/008/003/0858/0861

AUTHOR: Akhmedov, A. G.; Dautov, R. A.; Petrov, G. T.

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Study of internal motions in some solids by the pulsed nuclear magnetic resonance method

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 858-861

TOPIC TAGS: fluorine, nuclear magnetic resonance, spin lattice relaxation, dipole interaction

ABSTRACT: The authors measured by a pulsed method the longitudinal and transverse relaxation times  $T_1$  and  $T_2$  of  $F^{19}$  nuclei in polycrystalline samples of  $NH_4BF_4$ ,  $(NH_4)_2BeF_4$ , and  $KSbF_4$  in the temperature interval from 4.2K to room temperature. These salts were investigated previously by the authors (FTI v. 6, 529, 1964) and by others but in narrower temperature intervals. The samples were made in the form of pressed cylinders 15 mm high and 10 mm in diameter. The apparatus and the procedure of the relaxation-time measurements were essentially the same as described in the earlier paper. In the case of  $NH_4BF_4$   $T_1$  of fluorine decreases with rising temperature, passes through a minimum, and then goes through a maximum. In the case of the other two salts a continuous decrease was observed with increasing temperature. It is deduced from the results that the main mechanism of the spin-lattice relaxation

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ACC NR: AP6009674

of fluorine is the modulation of the dipole interactions by the internal motions of the groups of atoms in these compounds. In the case of  $\text{KSbF}_4$ , a jump in the value of  $T_2$  occurs at 230K, and there are indications of a phase transition near 170K. The activation energy of internal motion in  $\text{KSbF}_4$  is estimated on the basis of the results to be 1.66 kcal/mole. Orig. art. has: 2 figures, 1 formula, and 2 tables.

SUB CODE: 20/

SUBM DATE: 03Aug65/

ORIG REF: 001/

OTH REF: 008

Card 2/2 CC

C. A.  
Dautov, R. K.

15

Effect of field-protective forest strips on some chemical-  
properties of soils of forest-meadow zones. R. K. Dautov,  
Doklady Akad. Nauk S.S.S.R. 73, 805-7(1950).--Both in  
chernozem and in sod-podzol soils there is a decline of total  
humus in a direction perpendicular to the forest strip; the  
effect is noticeable over 100 m. or more; it is probably  
caused by higher microbiol. activity in the vicinity of the  
tree plantings and by the reduced effects of erosion. In sod-  
podzol soils an increase of water-sol. humus occurs in the  
vicinity of the strips, but in chernozem there is a decrease.  
The general level of humus is increased by the presence of  
forest strips. pH values are slightly lowered in the vicinity  
of the tree strips. G. M. Kosolapoff

1. DAUTOV, R. K.
2. USSR (600)
3. Windbreaks, shelterbelts, etc.
4. Effect of shelterbelts upon the volume of the snow cover and freezing depth of soils.  
Dokl.AN SSSR 89 No. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

USSR/Cultivated Plants - Grains.

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29709

M-2

Author : Samuilov, F.D., Dautov, R.K.  
Inst : -

Title : A Experiment in Raising Corn in the South Eastern Rayons.  
of the Tatar ASSR in 1955.

Orig Pub : Tr. Kazansk. fil. AN SSSR, Ser. biol.n., 1956 (1957), vyp.  
4, 35-50.

Abstract : The results of a generalization of the experimentation of  
leading figures in agriculture. With the correct agro-  
techny, despite unfavorable meteorological conditions  
during the period of vegetation in 1955, the kolkhozes had  
good yields of green stuff, especially on bottom land and  
on the first flooded terraces, on meadow chernozem and  
floodland soils; an increase in soil acidity and density  
brings about a poor development of the corn; the optimal  
planting time was in the third ten day period of May;

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APPROVED FOR RELEASE: 08/25/2000  
USSR/Cultivated Plants - Grains.

CIA-RDP86-00513R000509730011-5"

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29709

M-2

when the corn was raised for ensilage the biggest yield  
was gotten by leaving the plants in bunches of 3-4, and  
when grown for the grain in groups of 2 plants apiece.

Card 2/2

DAUTOV, R.K.

Moisture balance of gray forest soils under corn and under winter  
rye in wet and dry years. Pochvovedenie no.12:40-48 D '61.  
(MIRA 16:8)

1. Biologicheskiy institut Kazanskogo filiala AN SSSR.  
(Soil moisture)

3(5)

SOV/31-59-2-9/17

AUTHORS:

Dautov, R.M., Kayupov, A.K., and Petrovskaya, N.M.

TITLE:

Phengite Rocks in the Zyryanovsk Rayon (Fengitovaya poroda v Zyryanovskom rayone)

PERIODICAL:

Vestnik Akademii nauk Kazakhskoy SSR, 1959, Nr 2, pp 86 - 90 (USSR)

ABSTRACT:

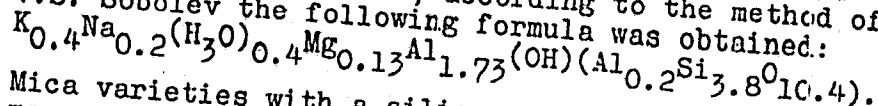
This article is a report on the site, characteristics and genesis of a special micaceous rock recently discovered by the geologist R.M. Dautov in the southeastern part of the Revnyushinskaya anticlinal fold (Revnyushinskaya antiklinal'naya struktura) in the Zyryanovsk Rayon. In this section, the site of the ore field of the Grekhovskaya group (Grekhovskaya gruppa) of polymetallic layers, the geologist found a fine-grained micaceous rock in the form of a mealy, friable mass of yellowish color, greasy to the touch. Until now six outcrops in different places have been established, which are attributed to the thick sedimentary-volcanic rock layer of the middle Devonian period.

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Phengite Rocks in the Zyryanovsk Rayon

SOV/31-59-2-9/17

A chemical analysis of a monomineral rock fraction was carried out by R.L. Kenarskaya of the chemical laboratory of IGN of the Kazakh AS. Upon converting the data of the chemical analysis (see table of article) to the crystallo-chemical formula at the rate of 12 oxygen atoms, according to the method of V.S. Sobolev the following formula was obtained:



Mica varieties with a silica content of 47-49% and more are called phengites by A.K. Boldyrev and other scientists. They consider them as an intermediate variety between muscovite and pyrophyllite with the substitution of the aluminum component by silica in the tetrahedral group. Such a substitution causes a corresponding potassium reduction in the mineral. With a full substitution of aluminum by silica, which causes the disappearance of potassium, pyrophyllite is obtained. On the basis of their analysis of the characteristics of the phengite rocks the authors maintain that the following can be established:

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Phengite Rocks in the Zyryanovsk Rayon

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1) rock formation after folding; 2) known outcrops may be attributed to that section of the middle paleozoic stratigraphic profile, which contains the absolute majority of polymetallic and copper layers in the given district. In addition to the scientists already cited the following names are mentioned: G.N. Shcherba, N.N. Kurek, B.I. Veyts, M.V. Tashchinina. There are 1 table, 1 diagram, and 7 Soviet references.

Card 3/3

32662

S/126/61/012/005/026/028  
E040/E435

18.8306

AUTHORS: Edel'man, F.L., Pokrovskiy, V.V., Tushinskiy, L.I.,  
Dautova, A.I.

TITLE: Superstructure and anomalous corrosion resistance

PERIODICAL: Fizika metallov i metallovedeniye, v.12, no.5, 1961,  
778-779

TEXT: The anomalous drop in the corrosion resistance of ferroaluminium alloys in the temperature interval of 550 to 530°C was investigated on cast ferroaluminium specimens containing 2.49 to 29.36% Al and impurities of C, Si, Mn, S and P in the total quantity of less than 0.5 to 0.8%. The specimens were dissolved in molten 0-1 grade tin at various temperatures (up to 1200°C) and the quantity of the dissolved ferroaluminium alloys was determined at the various test temperatures. All specimens were annealed before tests. The data obtained are shown graphically. It was found that a sharp deterioration in the corrosion resistance of ferroaluminium alloys corresponds to the temperature intervals of 500 to 600°C and 1000 to 1200°C. The absolute solubility of the test specimens with various aluminium contents is of the same order for all alloys with the exception of

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32662

S/126/61/012/005/026/028  
E040/E435

Superstructure and anomalous ...

the text.

ASSOCIATION: Novosibirskiy elektrotekhnicheskii institut  
(Novosibirsk Electrotechnical Institute)

SUBMITTED: March 13, 1961

X

Card 3/3

GELLER, B.E.; KAMALOV, S.; DAUTOVA, F.M.

APPROVED FOR RELEASE: 08/25/2000

CIA-RDP86-00513R000509730011-5

Coagulation processes occurring during carbon-chain fiber forming.

Khim. volok. no.5:5-9 '63.

(MIRA 16:10)

1. Tashkentskiy tekstil'nyy institut.

DAUTOVA, K.V., assistant; SOKOLOVA-PONOMAREVA, O.D., chlen-korrespondent Akademii meditsinskikh nauk SSSR, professor, zavedyushchaya.

Blood pressure in healthy children of school age; preliminary report.  
Vop.pediat. 21 no.2:29-35 Mr-Apr '53. (MLRA 6:6)

1. Kafedra detskikh bolezney Omskogo meditsinskogo instituta imeni M.I. Kalinina. 2. Akademiya meditsinskikh nauk SSSR (for Sokolova-Ponomareva).  
(Blood pressure)

DAUTOVA, K. V. Cand Med Sci -- (diss) "Concerning arterial blood pressure in healthy school age children." Moscow, 1958, 17 pp, (Order of Labor Red Banner Inst of Pediatrics of the Acad Med Sci USSR), 230 copies, (KL, 32-60, 146)

NOVIKOV, I.I.; DAUTOVA, L.I.

Investigating the copper angle of the system copper -- nickel --  
silicon. Zhur. neorg. khim. 2 no.12:2766-2770 D '57. (MIRA 11:2)

1. Moskovskiy institut tevetnykh metallov i zolota im. M.I. Kalinina  
i Institut yadernoy fiziki AN Kaz SSR.  
(Copper) (Nickel) (Silicon)

*DAUTOVA, L. I.*

24-11-28/31

AUTHORS: Dautova, L. I. and Novikov, I. I. (Alma-Ata, Moscow)

TITLE: Investigation of the hot brittleness of copper alloys.  
(Issledovaniye goryachelomkosti mednykh splavov).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.11, pp. 189-193 (USSR)

ABSTRACT: Since it is easier to carry out experiments with aluminium alloys than with high melting point ferrous and non-ferrous alloys, the authors considered it important to determine whether fundamental relations detected relating to the hot brittleness of light alloys are also valid for other groups of alloys. In this paper some results are described of investigation of the dependence of hot brittleness on the composition in the systems copper-tin and copper-nickel-silicon. The hot brittleness of bronze was investigated by casting into graphite moulds specimens of various cross sections, as shown in Fig.1, the top of the specimens serving as excess material. For specimens with too small a cross section, shrinkage is impeded and this leads to formation of hot cracks in the transition part of the specimen near to its top head but hot cracks were never observed at the foot of the specimen. The test results depend strongly on the geometry of the transition part of

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24-11-28/31

Investigation of the hot brittleness of copper alloys.

the specimen near its head. The test results showed that hot cracks in binary and ternary alloys are caused in the same way as in aluminium alloys by impeded shrinkage in the crystallisation temperature range and the intensity of the tendency to develop hot cracks is linked with the "effective" temperature range of the solid-liquid state. Zonal liquation may have a strong influence on the character of the dependence on the composition of the tendency to develop hot cracks. The graph, Fig.2, shows the dependence of the hot cracking on the composition for the system Cu-Sn; Fig.3 shows a photo (magnified 400 times) of a healed hot crack in a copper alloy containing 12% Sn; Fig.4 shows the dependence of hot cracking on the composition for the system Cu-Si and for cuts of the system Cu-Ni-Si; Fig.5 shows the curves of equal tendency to hot cracking for the system Cu-Ni-Si for the range of up to 10% Ni and up to 10% Si (rest Cu). There are 5 figures and 14 references, 11 of which are Slavic.

SUBMITTED: March 11, 1957.

ASSOCIATIONS: Institute of Nuclear Physics Ac.Sc. Kazakh SSR.  
Card 2/3 (Institut Yadernoy Fiziki AN Kazakhskoy SSR) and

24-11-28/31

Investigation of the hot brittleness of copper alloys.

Moscow Institute of Non-Ferrous Metals and Gold.  
(Moskovskiy Institut Tsvetnykh Metallov i Zolota).

AVAILABLE: Library of Congress.

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DAUTOVA, L.I.

20-1-30/54

AUTHOR  
TITLE

NOVIKOV I.I., DAUTOVA L.I.,

The Relative Resistance to Heat as Dependent on Composition in the  
Cu - Ni - Si System.

(Zavisimost' otnositel'noy zharoprochnosti ot sostava v sisteme Cu-Ni-Si - Russian)

PERIODICAL

Doklady Akad.Nauk SSSR, 1957, Vol 115, Nr 1, pp 110 - 113 (U.S.S.R.)

ABSTRACT

A great number of papers was written on the relation of heat resistance to the phase diagram. The basic types of the diagrams "heat resistance-phase" were derived on the basis of the investigation of concrete double systems and individual cross sections of multicomponent systems. In the studies by Bochvar and Zakharov an important part in the increase of heat resistance is ascribed not only to the composition of the solid fundamental solution but also to the structure and the properties of the excess phase which coexists with this solution. In many works by Kornilov the determining part of the solid solution is emphasized, the maximum of heat resistance often being connected with the highly saturated solid solution. The experimental material accumulated shows that the character of dependence of physical properties on the composition changes under the influence of various factors, e.g. on change of temperature. The influence of the nature of coexisting phases upon the dependence of heat resistance on composition may easily be seen from radial cross sections of a complex ternary system in which second phases with various properties border on the solid fundamental solution. As far as the authors know, the study of heat resistance was approached in this manner. They chose the Cu-Ni-Si system for their investigation in which, at 700°C, phases

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The Relative Resistance to Heat as Dependent on Composition in the Cu-Ni-Si System.

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of various nature coexist with the solid solution on a copper base:  $\text{Ni}_5\text{Si}_2$ , the  $\beta$ -phase (Cu-Si) and the ternary compound, the phase in radial cross sections of a ternary system. The maximum of heat resistance generally occurs either in the two-phase (but also in the three-phase) range or in the range of unsaturated solid solutions. The coincidence of the maximum of heat resistance with the limit of the solid solution represents a special case. A strong influence on the position of the heat-resistance maximum with relation to the limit of the one-phase range is exerted by the relation of the physical properties of the solid solution (the basis of composition) to the excess phase. A fourth one has to be added to the schemata by Zakharov. The following is of great importance in practice: the increase of heat resistance up to the maximum which lies in the heterogeneous domain, the decrease to a flat minimum, and, finally, a renewed increase of heat resistance up to the composition of the second phase. (4 illustration, 12 Slavic references).

ASSOCIATION

Moskovskiy institut tsvetnykh metallov i zolota im. M. I. Kalinina,  
Fiziko-Tekhnicheskii institut Akademii nauk Kaz SSR

PRESENTED BY

BOCHVAR, A.A., Member of the Academy, January 24, 1957

SUBMITTED

23.1.1957

AVAILABLE

Library of Congress.

Card 2/2

SCV/137-59-5-11024

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, pp 221-222 (USSR)

AUTHORS: Novikov, I.I., Dautova, L.I.

TITLE:  $\sqrt{\text{Cu-Ni-Si}}$  The Dependence of Heat Resistance on the Composition in the Cu - Ni - Si System

PERIODICAL: Tr. In-ta yadern. fiz. AS KazSSR, 1958, Nr 1, pp 249 - 254

ABSTRACT: The authors used the method of long-time hardness at 700°C to investigate the relative heat resistance of cast Cu-Ni-Si alloys on four radial sections passing through the angle at the Cu vertex and the points of chemical compounds such as  $\text{Ni}_5\text{Si}_2$ ,  $\text{Ni}_2\text{Si}$ ,  $\text{NiSi}$ ,  $\text{NiSi}_2$ , on radial sections at constant Ni - Si ratios of 1:3 and 1:9, and of binary Cu-Ni and Cu-Si alloys. It was established that the optimum heat resistance on the radial sections was generally located either in the bi-phase region or in the region of the non-saturated solid solution. The coincidence of maximum heat resistance and the boundary of the solid solution is a special case. The location of maximum

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SOV/137-59-5-11024

The Dependence of Heat Resistance on the Composition in the Cu - Ni - Si System

heat resistance, in respect to the boundary of the single-phase region, depends on the correlation of the strength properties of the solid solution (bases of the alloy) and of the excessive phase. If the second phase is more heat resistant than the basic solid solution, a shifting of the heat-resistance maximum toward the bi-phase region may be expected. The absolute value of heat resistance depends on the combination of alloying elements in the solid solution. The authors suggest a system of dependence of heat resistance on the composition, according to which increased heat resistance is observed in alloying beyond the limit of solubility to a given maximum. Then the heat resistance decreases, attaining the minimum and a new increase in heat resistance occurs close to the composition of the secondary phase. ✓B

E.K.

Card 2/2

NOVIKOV, I.I.; DAUTOVA, L.I.

Investigation of the hot-shortness of copper alloys. Trudy  
Inst. iad. fiz. AN Kazakh SSR 1:255-264 '58. (MIRA 12:2)  
(Copper alloys--Testing)

Transactions of the Inst. of Nuclear Physics, Kazakh SSR, Acad. Sci Trudy,  
v.i., Alma-Ata, Izd-vo AN Kaz SSR, 1958.

This vol. contains results of research at the Inst. of Nuclear Physics for  
the years 1954-56.

SOV/137-59-3-6213

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 181 (USSR)

AUTHORS: Novikov, I. I., Dautova, L. I.

TITLE: An Investigation of the Phase Diagram of a Cu-Ni-Si System  
(Issledovaniye diagrammy sostoyaniya sistemy med'-nikel'-kreimniy)

PERIODICAL: Tr. In-ta Yadern. fiz. AN KazSSR, 1958, Nr 1, pp 274-281

ABSTRACT: Thermal, micrometallographic, and X-ray-diffraction analyses combined with microhardness measurements were employed in studying the Cu section of a Cu-Ni-Si system in a region corresponding to concentrations of up to 8% Ni and 8% Si. Isotherms for the liquidus line were plotted in increments of 10°C together with the isotherms for the limited solid-state solubility at temperatures of 700, 800, 900, and 1000°. Six polythermal and four isothermal sections were also plotted. It was established that none of the chemical compounds of Ni and Si forms a quasi-binary system with Cu. The appearance of a fold on the liquidus surface between the Cu-NiSi and the Cu-NiSi<sub>2</sub> sections is probably caused by the presence of a ternary  $\sigma$  compound in the system. This is also corroborated by a microhardness investigation which indicates

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SOV/137-59-3-6213

An Investigation of the Phase Diagram of a Cu-Ni-Si System

that a phase having a hardness of 609-865 kg/mm<sup>2</sup> is in equilibrium with the solid Cu-based solution; since the hardness of the other intermetallic compounds in the system is significantly greater, the observed phase is, apparently, the  $\sigma$  compound.

L. V.

Transactions of the Inst. of Nuclear Physics, Kazakh SSR, Acad. Sci Trudy, v.1., Alma-Ata, Izd-vo AN Kaz SSR, 1958.

This vol. contains results of research at the Inst. of Nuclear Physics for the years 1954-56.

Card 2/2

5(2)

SOV/78-4-8-36/43

**AUTHORS:**

Presnyakov, A. A., Dautova, L. I., Klyuchnikov, Yu. F.

**TITLE:**

On Some Characteristic Features of the Change of the Microhardness and the Crystal Structure of Brass Alloys (O nekotorykh osobennostyakh izmeneniya mikrotverdesti i kristallicheskoy struktury latuney)

**PERIODICAL:**

Zhurnal neorganicheskoy khimii, 1959, Vol. 4, Nr 8, pp 1926-1927 (USSR)

**ABSTRACT:**

Publications contain data on the anomalous changes of the properties of brass alloys in dependence on the composition and temperature (Refs 1,2,5). For this reason the author investigated the crystal structure and the micro-hardness of the brass alloys in cast state and after different thermal processing such as annealing, tempering. The following may be concluded from the results (Figs 1,2): the maximum of the curve of microhardness of cast samples indicates transformations in solid state. The considerable decrease of the microhardness after the annealing in alloys containing more than 25% zinc indicates a "hardening" in the liquid. After deformation and annealing a regulation under the formation of a two-phase

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SOV/78-4-8-36/43

On Some Characteristic Features of the Change of the Microhardness and the Crystal Structure of Brass Alloys

mixture takes place in the alloys. Annealing at 800° with subsequent cooling leads to the fixation of the high-temperature state of brass alloys. Figure 3 shows the parameters of the crystal lattices. The strong scattering confirms the existence of a heterogeneity of second order in the solid solutions. In the alloys L95 - L80 the steady course of the parameters is disturbed between 200-300°. This range of disturbance agrees well with the temperature of regulation found by W. Koester and W. Schale (Ref. 5). There are 4 figures and 6 references, 4 of which are Soviet.

SUBMITTED: December 18, 1958

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18.7500, 18.1200

66228

SOV/126-8-3-11/33

**AUTHORS:** Presnyakov, A.A., Dautova, L.I. and Klyuchnikov, Yu.F.

**TITLE:** Homogeneous Ageing of Unsaturated Solid Solutions

**PERIODICAL:** Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 3, pp 394-399 (USSR)

**ABSTRACT:** The following simple brasses were investigated: L95, L90, L85, L80, L75, L70, L65 and L60; and the following aluminium bronzes: Br.A1, A2, A3, A4, A5, A6, A7, A8, A9 and A10. All the above alloys were made from copper, MO, aluminium A00 and zinc TsV. The alloys were prepared for X-ray investigation as follows: rods of 18 mm diameter and 120 mm length were cast and forged (initial forging temperature 800°C) to a degree of deformation of approximately 30%. From the forged rods cylindrical "tumblers" were cut. The thickness of their base was 1.5 to 2 mm and their external surface (used for X-ray investigation) was ground and polished. The specimens were then annealed in air at 800°C for 6 hours. After annealing, the working surface was ground, polished and etched with nitric acid in order to remove the work-hardened layer. X-ray pictures were taken using a Cu-K<sub>α</sub> irradiation. In the X-ray pictures, the interference spots

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Homogeneous Ageing of Unsaturated Solid Solutions

from the planes (420) and (331) were fixed by an exposure of 45 minutes. The specimen was placed in the electric furnace and remained immobile during exposure. It was heated to 20, 100, 200, 250, 300, 350, 400, 450 and 500°C and the temperature was regulated within 10 to 20°. In Fig 1, X-ray photographs of solid solutions are shown: a - L80, first X-ray exposure after annealing;  $\delta$  - L80, repeated X-ray exposure after storage; B - Br A5, first X-ray exposure after annealing;  $\delta$  - Br A5, repeated X-ray exposure after storage. In Fig 2, X-ray pictures of alloys with "incomplete recrystallization" are shown: a - L90;  $\delta$  - Br A2. Fig 3 shows X-ray pictures of brass specimens quenched from 800°C in water after annealing for 6 hours: a - brass L70, immediately after quenching;  $\delta$  - brass L90, after quenching and ageing. Fig 4 shows "recrystallization" after ageing of the alloy Br A2 (400°C). The authors arrived at the following conclusions: (1) Homogenization ageing in unsaturated solid solutions has been observed. This is not accompanied by a change in the phase composition of the alloy or by precipitation of excess

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Homogeneous Ageing of Unsaturated Solid Solutions

phases. It results in a very great refining of the mosaic-block structure and the disorientation of the mosaic blocks relative to each other. (2) The occurrence of ageing in solid solutions having undergone hot deformation and subsequent annealing testifies to the "quenching" of the high temperature state of the crystal structure of the alloy on slow cooling. (3) The refinement of the blocks during the ageing process and their recrystallization at elevated temperatures shows that for various temperature conditions equilibrium mosaic structures exist, towards which the alloy tends under all conditions, including that of room temperature. (4) The "ageing" process of solid solutions is reversible. The rate at which the reverse process occurs will be greater, the greater the rate of the direct process. (5) The homogeneous ageing process is preceded by the closest ordering of solid solutions. This seems to explain the low rate at which it takes place. There are 4 figures, 1 table and 16 references, 15 of which are Soviet and 1 German.

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SOV/126-8-3-11/33

Homogeneous Ageing of Unsaturated Solid Solutions

ASSOCIATION: Institut yadernoy fiziki AN KazSSR (Institute of  
Nuclear Physics AS KazSSR)

SUBMITTED: August 26, 1958 (initially)  
November 27, 1958 (after revision)

Card 4/4

S/126/60/010/005/007/030  
E073/E435

AUTHORS: Presnyakov, A.A., Dautova, L.I., and Klyuchnikov, Yu.F.  
TITLE: On Anomalies in the Electric Resistance of Brasses and  
Aluminium Bronzes ✓  
PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.5,  
pp.676-680

TEXT: Earlier work (Ref.10) related to phenomenon of homogeneous ageing of unsaturated solid solutions and also (Ref.11) to investigation of the changes in the crystal structure of brasses with temperature and microhardness after various heat treatments. Particularly, the anomalous temperature dependence of the crystal lattice parameter of the brass in the temperature range 200 to 300°C was observed when an increase in temperature did not result in an increase of this parameter but in constancy or even a decrease. This fact, and also the character of the microhardness changes with temperature, led to the conclusion that ordering takes place in Cu-Zn  $\alpha$ -solutions and particularly that ordering also explains the homogeneous ageing. In this paper, a continuation of this work is described which was devoted to investigating the kinetics of the process of ordering of  $\alpha$ -solutions of Cu-Zn and  
Card 1/4 ✓

S/126/60/010/005/007/030  
E073/E435

On Anomalies in the Electric Resistance of Brasses and Aluminium Bronzes


Cu-Al. Alloys containing 5, 10, 15, 20, 25, 30 and 38% Zn and 1, 2, 3, 4, 5 and 6% Al were investigated, determining the dependence of the specific resistance on temperature and duration of tempering of quenched specimens. The brass specimens were in the form of 2 mm diameter wires and the Al bronze specimens were in the form of 1 x 10 x 200 mm strips. The wire (500 mm long) was wound into a spiral. Twin copper conductors were welded on, by arc welding, to the ends of the spirals and the strips for the purpose of connection to the supply and potentiometric terminals of the bridge; this enabled carrying out heat treatment without it being necessary to re-solder the leads. The resistance was measured with a double Thomson-Wheatstone bridge of an accuracy of 0.05%. For eliminating oxidation during heat treatment, the specimens were coated with a layer of liquid glass. Quenching was in iced water after soaking for 45 min at 800°C. The quenched specimens were subjected to tempering at 100, 200, 300, 400, 500 and 600°C for durations of 10 min to 12 hours, followed by air

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S/126/60/010/005/007/030  
E073/E435

**On Anomalies in the Electric Resistance of Brasses and Aluminium Bronzes**

cooling. Fig.1 to 4 show the curves of the relative changes in the resistance as a function of temperature and tempering time, taking as 100% the electric resistance of the quenched specimens. Fig.5 gives the dependence of the specific resistance of Cu-Zn alloys on the composition for various states (after 80% deformation, after annealing for 1 hour at 600°C and after quenching from 800°C). The following conclusions are arrived at:

- 1) Analysis of the changes of the electric resistance of brasses as a function of the tempering temperature confirms the presence in these of the process of ordering.
- 2) The maximum ordering manifests itself for a Zn content of 10 and 30 wt.%. 
- 3) The process of ordering is preceded by the occurrence of the K-state in the case of long duration annealing of quenched alloys at 200 to 300°C, which then changes into ordinary ordering, the maximum degree of development being achieved at 400°C. Tempering at 500°C and above leads to the formation of a complete disorder

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S/126/60/010/005/007/030  
EO73/E435

On Anomalies in the Electric Resistance of Brasses and Aluminium  
Bronzes

state of the brasses.

4) Occurrence of the K-state and of ordering also occurs in  
Al bronzes.

There are 5 figures and 14 references: 8 Soviet and 6 Non-Soviet.

ASSOCIATION: Institut yadernoy fiziki AN KazSSR (Institute of  
Nuclear Physics AS KazSSR)

SUBMITTED: February 20, 1960 (initially)  
June 5, 1960 (after revision)

Card 4/4

S/020/60/132/02/24/067  
B014/B007AUTHORS: Presnyakov, A.A., Dautova, L.I.TITLE: The Anomalies in the Properties of Zinc <sup>1</sup>PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 2, pp. 333-335

TEXT: The present paper deals with investigations of the temperature dependence of the structure and properties of zinc. A kind of zinc with 0.01% impurities was investigated which is produced in an electric furnace. In the diagram of Fig. 1 the plasticity, the elongation, and the deformation resistivity of the material at different temperatures is graphically represented. The results of X-ray diffraction studies are graphically represented in Fig. 2. Here it is shown that the change of the lattice constant  $a$  is of complicated character with rising temperature. The corresponding curve divides into three branches. The parameter  $\alpha$  changes monotonically but with different temperature coefficients within the range up to  $120^{\circ}\text{C}$ , from  $120^{\circ} - 180^{\circ}\text{C}$ , and beyond  $180^{\circ}\text{C}$ . In all temperature ranges investigated (up to  $220^{\circ}\text{C}$ ) the nature of the crystal lattice does not change, but at  $120^{\circ}$  and  $180^{\circ}\text{C}$  very fine changes

Card 1/2

The Anomalies in the Properties of Zinc

S/020/60/132/02/24/067  
B014/B007

take place in the lattice. From the fact that at these temperatures no changes of volume, but changes of the coefficient of thermal expansion occur, the authors draw conclusions as to phase transitions of the second kind. This is also indicated by the character of the changes of the electric resistivity in zinc single crystals. The dependence of the electric resistivity on temperature, constructed according to data by S.N. Rabotnov, is graphically represented in Fig. 3 (Ref. 11). A.F. Plekhanov and M.I. Kognev (Ref. 12) formed the same opinions when analyzing the changes in the properties of zinc. N.V. Ageyev et al. (Ref. 13) are also mentioned; they referred to spin-ordering. There are 3 figures and 13 references, 11 of which are Soviet.

ASSOCIATION: Institut yadernoy fiziki Akademii nauk KazSSR (Institute of Nuclear Physics of the Academy of Sciences, Kazakhskaya SSR)

PRESENTED: January 6, 1960, by I.P. Bardin, Academician

SUBMITTED: January 5, 1960

Card 2/2



DAUTOVA, L. I.

PHASE I BOOK EXPLOITATION

807/5690

23

Akademiya nauk Kazakhskoy SSR. Institut yadernoy fiziki.

Metallovedeniye i obrabotka metallov darleniyem (Physical Metallurgy and Pressworking of Metals) Alma-Ata, 1951. 183 p. (Series: Trudy Instituta yadernoy fiziki, t. 4) 2,450 copies printed.

Resp. Eds.: I. G. Grinman and A. A. Presnyakov; Resp. Secretary: V. V. Chervyakova;  
Eds.: M. Ya. Brailovskaya and T. I. Shevchuk; Tech. Ed.: Z. P. Rorokina.

PURPOSE: This book is intended for scientific research workers, technical personnel in industry, and students and aspirants interested in problems of physical metallurgy and the pressworking of metals.

COVERAGE: The book, Volume IV of the Transactions of the Institute of Nuclear Physics, Academy of Sciences Kazakh SSR, contains papers reviewing problems of physical metallurgy. Attention is given to a consideration of metal ductility, strength, phase transformation, and the ordering of various alloys, and to a discussion of the diffusion mechanism of the plasticity. Experimental findings concerning strength, deformation, and external friction in the working of non-ferrous metals and alloys are included in papers dealing with metal rolling.

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Physical Metallurgy and Processing of Metals

867/5690

Problems of automatic inspection and control of multiaxial wire-drawing forms are also considered. Most of the papers are accompanied by references, the majority of which are Soviet.

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Physical Metallurgy and Pressworking of Metals

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Physical Metallurgy and Processing of Metals

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23

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AVAILABLE: Library of Congress

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VK/vro/mas  
11-22-61

PRESNYAKOV, A.A.; DAUTOVA, L.I.

Polymorphism of zinc. Trudy Inst. rad. fiz. AN Kazakh. SSR 4:42-47  
'61. (MIRA 14:8)  
(Zinc—Metallography) (Polymorphism)

S/137/62/000/003/119/191  
A060/A101

AUTHORS: Presnyakov, A. A., Dautova, L. I.

TITLE: On the nature of cold brittleness of metals and alloys

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 24, abstract 31143  
("Tr. In-ta yadern. fiz. AN KazSSR", 1961, 4, 48 - 52)

TEXT: The article considers the literature data on the nature of cold brittleness of metals and cites data on the change in the ductility of Sn as a function of temperature and on the change in Zn strength as a function of temperature. It is pointed out that cold brittleness is observed in metals with a definite type of crystal lattice, however the fact of a metal belonging to a definite type of lattice does not determine its behavior at low temperatures. The transition of the metal to brittleness is caused by a re-arrangement of the structure, leading to a strengthening of the binding forces in the lattice and the rise in their directivity; it occurs in a temperature range whose width decreases as a function of the transformation kinetics from one structural state to another. The transition from plasticity to brittleness is, as a rule, preceded by a more or less considerable increase of plasticity in a narrow temperature

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On the nature of cold brittleness ...

S/137/62/000/003/119/191  
A060/A101

region, caused by a preparatory stage of transformation. There are 30 references.

P. Zubarev

[Abstracter's note: Complete translation]

Card 2/2

On some peculiarities of changes ...

S/137/62/000/003/137/191  
A052/A101

mixture of two phases. The annealing of brasses at a high temperature with a slow cooling leads to the fixation of the high-temperature state relatively unstable under usual conditions. The annealing of brasses at 600°C gives the most balanced state which is characterized by the lowest microhardness. At lower temperatures of a long-time tempering 2 groups of alloys undergoing certain changes are noted. Alloys Л 85 (L85) and Л 80 (L80) after tempering at 400°C during 4 hours display a sharp increase of microhardness. The microhardness of Л 75 (L75) brass increases sharply after 4 hours' tempering at 500°C. In Л 95 (L95), Л 90 (L90) and Л 70 (L70) alloys no structure conversions take place, and their structure stabilizes after the 1st annealing. The X-ray study has confirmed that the equilibrium solid solutions have considerable fluctuations of the composition in individual blocks or groups of blocks. There are 14 references.

A. Rusakov

[Abstracter's note: Complete translation]

Card 2/2

On the anomalies in the electrical resistance ...

S/137/62/000/003/113/191  
A062/A101

a re-arrangement of the crystal lattice as result of the spontaneous ordering (or artificial aging) after hardening from high temperatures. In the authors' opinion the presence of transition elements in the solution is not required for the rise of the K-state. There are 14 references. See RZhMet, 1961, 5Zh44.

I. Strebkov

[Abstracter's note: Complete translation]

Card 2/2

35920  
S/148/62/000/002/007/008  
E073/E535

18.11.50

AUTHORS: Edel'man, F.L., Pokrovskiy, V.V., Tushinskiy, L.I.  
and Dautova, A.I.

TITLE: Stability of alloy steels in molten tin

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya  
metallurgiya, no.2, 1962, 123-124

TEXT: The aim of the work was to determine the stability of various metals and alloys in molten tin at temperatures above 500°C. Specimens made of alloy steels of standard composition, of pure metals (titanium, tantalum and nickel) and of iron-aluminium alloys containing 2.49, 16.11, 18.44, 21.62, 25.76 and 29.36% aluminium, rest Fe were immersed for two hours in molten tin at temperatures between 400 and 1250°C. The degree of dissolution of the metal in the tin was determined by calculation from the difference between the initial and the final contents of the particular material in the tin. Titanium and tantalum proved resistant against dissolution in tin but became brittle at 600°C and above; therefore, they are unsuitable as structural materials under the given conditions. At temperatures up to 1000°C, the

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S/817/62/005/000/005/012  
A006/A101

AUTHORS: Putilin, Yu. M., Ponomarev, V. D., Milov, A. I., Dautova, L. I.

TITLE: Thermographical investigation of the  $K_2TiF_6$ -NaCl- $TiO_2$  system

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut metallurgii i obogashcheniya. Trudy. v. 5, 1962, Tsvetnaya metallurgiya, 82 - 94

TEXT: Using Kurnakov's thermal method the authors investigated the phase diagram of the  $K_2TiF_6$ -NaCl- $TiO_2$  system near binary eutectics  $K_2TiF_6$ -NaCl and  $K_2TiF_6$ - $TiO_2$ . Batches of these substances were mixed, remelted and heated in platinum crucibles or blocks placed in a pyrometrical apparatus. After thermographical inspection thermograms of 78 compositions were taken. On the basis of results obtained from thermographical, roentgenostructural and crystallographical analyses a phase diagram of the system and phase diagrams of the binary systems were plotted. A spatial diagram of the system in the investigated range is presented and described. Polythermic cross-sections of the system are given at a constant 1-, 2-, 3- and 4-% content of titanium dioxide. A fusibility diagram

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Thermographical investigation of the...

S/817/62/005/000/005/012  
A006/A101

of the system is plotted on the concentration triangle and the boundaries of lamination zones are determined (Figure 13). The behavior of the basic component of the alloys - potassium fluorotitanate - was analyzed. On the basis of previous data, obtained by Kolómitskiy, Milov, Ponomarev and Putilin, it is assumed that this component is present in three polymorphous forms. For pure potassium fluorotitanate the following modifications are to be considered:  $\delta$  - stable in a range from room temperature to 380°C;  $\gamma$  - stable in a 280 - 640°C range;  $\beta$  - stable at temperature over 640°C. Starting from 680°C noticeable dissociation begins. Full melting takes place at about 850°C. There are 17 figures and 1 table. ✓

Card 2/2

PRESNYAKOV, A.A.; DAUTOVA, L.I.

Certain peculiarities of the recrystallization of ordered alloys.  
Fiz. met. i metalloved. 14 no.3:461-462 3 '62. (MIRA 15:9)

1. Institut metallurgii i obogashcheniya AN KazSSR.  
(Alloys--Metallography) (Crystallization)

FUTILIN, Yu.M.; PONOMAREV, V.D.; MILOV, A.I.; DAUTOVA, L.I.

Thermographic investigation of the system  $K_2TiF_6 - NaCl - TiO_2$ .  
Trudy Inst. mat. i obog. AN Kazakh. SSR 5:82-94 '62.

(MIRA 15:11)

(Systems (Chemistry)) (Thermal analysis)

PRESNYAKOV, A.A.; DAUTOVA, L.I.

Certain characteristics of the ordering process of the  
copper-gold solid solution close to the  $\text{Cu}_3\text{Au}$  composition.  
Trudy Inst. met. i obog. AN Kazakh. SSR 5:179-183  
'62. (MIRA 15:11)

(Copper-gold alloys—Metallography)  
(Crystal lattices)

PRESNYAKOV, A.A.; DAUTOVA, L.I.; SAMOYLOV, V.A.; AITKHOZHIN, E.S.

Causes of structural anomalies and the properties of zinc.  
Trudy Inst. met. i obog. AN Kazakh. SSR 7:3-18 '63.

(MIRA 17:6)

DZHANBUSINOV, Ye.A.; DAUTOVA, L.I.; PRESNYAKOV, A.A.

Ordering of copper-palladium alloys in the neighborhood of  
the Cu-Pd composition. Trudy Inst. met. i obog. AN Kazakh. SSR  
7:24-29 '63. (MIRA 17:6)

DAUTOVA, L.I.; PRESNYAKOV, A.A.

Certain characteristics of the recrystallization of ordered alloys. Trudy Inst. met. i obog. AN Kazakh. SSR 7:36-37 '63.

Metastability of superlattices. Ibid.:89-91

(MLRA 17:6)

U 19495-63 EWP(q)/EWT(m)/EWP(B)/BDS AFFTC/ASD JD  
 ACCESSION NR: AP3004592 S/0126/63/016/001/0061/0064

AUTHORS: Presnyakov, A. A.; Dautova, L. I.; Dzhambusinov, Ye. A.

TITLE: Structural forms of solid Cu-Pd solution with the approximate composition  
Cu<sub>3</sub>Pd

SOURCE: Fizika metallov i metallovedeniya, v. 16, no. 1, 1963, 61-64

TOPIC TAGS: Cu-Pd alloy, structure, Cu<sub>3</sub>Pd

ABSTRACT: Cu alloys with 28.8 at.% of Pd have been studied in order to clarify the details of the ordering process. The cast alloy was subjected to x-ray analysis at temperatures up to 400C. A higher heating was impossible because of the lack of proper equipment. The cast samples were rolled (80% deformation), hardened, and tempered at increasing temperatures (100 to 750C). The lattice parameter increased linearly with the increase in temperature up to 350C, after which it remained constant. This was explained by the phase transition and sustained by the appearance of a new line on the x-ray pattern at 375C. The structure of the new phase (X) could not be detected because of lack of data. The

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L 19495-63

ACCESSION NR: AP3004592

samples (after deformation and hardening at 750C) were in a disordered state. The lattice parameters were correspondingly, 3.697<sub>3</sub> and 3.6856 kX. Tempering at the increased temperatures resulted in the following space lattices: 1) initial condition--cubic face centered lattice; 2) heating to 350C--the same; 3) to 375C--ordered cubic face centered (superlattice); 4) 475-650C--tetragonal face centered lattice; 5) 675-700C--the phase X (structure unknown); 6) 700C and higher--disordered cubic face centered lattice. The authors conclude that the appearance of the superlattice marks the first stage in the solid solution ordering. The final stage leads to the formation of a new crystalline lattice. This is due to the appearance of additional binding forces between atoms in the alloy. The superlattice and the intermediate phases are metastable transition forms. Orig. art. has: 1 table and 3 figures.

ASSOCIATION: Institut metallurgii iobogashcheniya AN KazSSR (Metallurgical Institute, Academy of Sciences, Kazakh SSR)

SUBMITTED: 22May62

DATE ACQ: 27Aug63

ENCL: 00

SUB CODE: ML

NO REF SOV: 005

OTHER: 005

Card 2/2

S/279/63/000/001/013/023  
E075/E452

AUTHORS: Presnyakov, A.A., Dautova, L.I., Ayt Khozhin, E.S.  
(Alma-Ata)

TITLE: On the problem of the nature of the rheotropic  
brittleness

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye  
tekhnicheskikh nauk. Metallurgiya i gornoye delo.  
no.1, 1963, 142-143

TEXT: If a cold brittle metal is deformed plastically in the  
absence of recrystallization, then the brittle state transition  
temperature decreases and the plasticity at room temperature  
increases. This phenomenon was called rheotropic brittleness.  
The authors investigated the nature of this phenomenon on zinc of  
a high purity (99.998%). The plasticity was determined by 180°  
bending, using strip specimens 0.5 mm thick and 5.75 mm wide,  
the determinations being made immediately after cutting, after  
6 months storing and after heat treatment at temperatures 50, 75,  
100 etc (in 25°C intervals) up to 400°C in air for one hour.  
In addition, electrical conductivity measurements and X-ray  
Card 1/2

S/279/63/000/001/013/023  
E075/E452

On the problem of the nature ...

photographs were taken after each heat treatment. The results obtained showed that generally accepted views on the rheotropic brittleness do not hold in the case of zinc; on the contrary, it was shown that high plasticity can be obtained by deformation above the recrystallization temperature. This plasticity is retained to some extent after the recrystallization is completed. It is thought that the views on the appearance of the rheotropic brittleness after deformation below the recrystallization temperature were due to the fact that previous investigations were carried out on metals with high recrystallization temperatures. There are 3 figures.

SUBMITTED: February 17, 1962

Card 2/2

BOSKOV, Zorica; DAUTOVIC, Milan; POPADIC, Slavko; PURKOV, Milan; SECUJAC, Branko; CVETKOV, Radojica

The problem of chorea in children. Srpski arh. celok. lek. 93  
no.3:251-259 Mr ' 65.

1. Decje odeljenje Opste bolnice "Djordje Joanovic" u Zrenjaninu  
(Nacelnik: dr. Branko Secujac) ; Neuropsihijatrijsko odeljenje  
Opste bolnice "Djordje Joancvic" u Zrenjaninu (Nacelnik: dr.  
Milan Purkov).

PEDIATRICS

YUGOSLAVIA

BOSKOV, Zorica; DAUTOVIC, Milan; POPADIC, Slavko; PURKOV, Milan; SECUJAC, Branko and CVETKOV, Radojica; Department of Pediatrics (Decje odeljenje) Chief (Nacelnik) Dr Branko SECUJAC; and Department of Neuropsychiatry (Neuropsihijatrijsko odeljenje) Chief Dr Milan PURKOV, General Hospital (Opsta bolnica) "Gjorgje Jovanovic", Zrenjanin.

"The Problem of Chorea Minor in Children."

Belgrade, Srpski Arhiv za Tselokupno Lekarstvo, Vol 93, No 3, Mar 65; pp 251-259.

Abstract [English summary modified]: Review of clinical data from the histories of 37 children with chorea minor, treated 1957 to 1964: graphs showing ages and sex; EKG changes; socioeconomic origin; onset by time of year; laboratory and other diagnostic findings; treatment; prevention; infections; psychological factors. Three graphs; 1 Soviet, 1 Yugoslav and 11 Western references; ms received 30 Oct 64.

1/1



117 AND 120 ORDERS										MO AND 6TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>Some data on glasses containing fluorine. A. N. DAUVALTER. <i>Keram. i Strel. 7</i>, No. 4, 20-1(1931).--In analyzing milk glasses, D. observed a more or less const. relationship between the F and Al contained in the glasses according to the formula <math>AlF_3</math>, although these glasses were different in compn. and from different batches. The fact that the greater part of the F contained in glass remains in the form of fluoaluminate and that the volatilization of F occurs slowly explains the corrosive action of glasses contg. F on fusing tanks because the <math>Al_2O_3</math> in the prod and "glazing" layer changes into <math>AlF_3</math>. The quantity of F remaining is equiv. to the Al content when milk glasses are calcd. from batches, according to fusing tests of opaque nepheline glass.</p> <p>M. V. KONDOROV</p>																			
<p>ASH-LEA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>120th 6th 117th 118th 119th 120th 121st 122nd 123rd 124th 125th 126th 127th 128th 129th 130th 131st 132nd 133rd 134th 135th</p>																			

19

Volatilization of fluorine in melting glass. A. N. (unpublished). *Korun. i. Steble* 4, No. 4, 23-6 (1932).--It is probable that during the melting of glass,  $SiF_4$  is evolved and is subsequently decumpled in contact with water vapors to  $SiO_2$  and  $4H_2F$ . The highly corrosive action of batches contg. F on glass pots and the fact that the  $SiO_2$  content is larger in the glass and the  $Al_2O_3$  content is lower in the glass than in the prog of the not support the view that  $AlF_3$  is formed with subsequent formation of  $SiF_4$ :  $4AlF_3 + 3SiO_2 = 3Al_2O_3 + 8HF$ .

M. V. KONDOROV

ASH-SCA METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX																			
<div style="position: relative; height: 100%;"> <span style="position: absolute; top: 5%; left: 10%; font-size: 2em; font-family: cursive;">BC</span> <div style="position: absolute; top: 10%; right: 10%; font-size: 1.5em;">B-1-9</div> <div style="position: absolute; top: 30%; left: 30%; text-align: center;"> <p><b>Sing nepheline glass. A. N. DAVYALOV (Kerng. i</b>  <b>Hoklo, 1953, 9, No. 3, 36-37).—The slag (SiO<sub>2</sub>, 53,</b>  <b>CaO 39%) obtained in the production of F afforded a</b>  <b>glass which melted easily, was easily worked and</b>  <b>paned, and had no tendency to devitrification.</b></p> <p style="text-align: right;">Ch. Ann.</p> </div> </div>																			
630-55A METALLURGICAL LITERATURE CLASSIFICATION										6-27-53									
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20										1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20									



19

**Melting glass with dust-like sand. A. V. Dostovskiy.**  
*Keram. i Staklo* 11, No. 8, 15-16 (1965).—Comparative  
 expts. made with various kinds of sand used for melting  
 glass are described. Glass melted with dust-like sand  
 was of higher quality than that melted with ordinary sand.  
 Table shows the results. M. V. Kozmoldy

ASH-31-A METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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**19**

RELAXATION OF STRESSES DURING TEMPERING OF GLASS. A. N.  
Dauvalier--*J. Tech. Phys.* (U. S. S. R.) 9, 782 (1960).  
The disappearance of birefringence of several glass plates  
at various temps. was observed. The rate  $-dP/dt$  of the  
decrease of stress  $P$  may be expressed by the equation  
 $-dP/dt = \alpha/\delta \sin \text{hyp } \delta P$ ;  $\alpha$  depends on the glass and  
the temp., and  $\delta$  on the conditions of exp. J. J. O.

ASB-56A METALLURGICAL LITERATURE CLASSIFICATION

BZOM DIVISION

104000 #2

104000 WEP ONE ONE

QUALITATIVE

WZOM DIVISION

RELEAST ONE ONE ONE

*C*

*19*

Precipitate rate of cooling glass when annealing. A.  
N. Gaval'ter. *Sobolnye Prom.* 18, No. 11, 28-31  
(1960).—The formulas of Murgatroyd (*C. A.* 24, 2964)  
used in computations of glass annealing are analyzed and  
criticized.  
M. V. Condoide

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

A.C.S.

Glass

How ways of glass coloring. A. N. DALYALTE, *Sokol-  
naya Prom.*, 1940, No. 12, p. 25; abstracted in *Jour. Soc.  
Glass Tech.*, 24 [106] 338 (1940).—Various shades and  
tints forming irregular designs and producing attractive  
effects on the surface of glass objects have been obtained  
by introducing 0.3 to 0.4% Ag in a glass of the following  
composition:  $\text{SiO}_2$  72.4,  $\text{CaO}$  8.97,  $\text{Na}_2\text{O}$  13.92,  $\text{K}_2\text{O}$  4.02,  
 $\text{SnO}_2$  0.24%. The silver is obtained from the waste  
from solutions for silvering mirrors. This glass is suit-  
able for art objects as well as for jewelry.

A.C.S.

Glass

\* Stress relaxation in glass at constant temperature.  
A. FRAUENHOF, *Zhur. Tekh. Fiz.*, 16 (3) 243-45 (1940);  
abstracted in *Physik. Rev.*, 53 (12) 1275 (1943).—Supple-  
menting a previous paper on the velocity of relaxation  
of stresses in glass (*Czech. Akad. Sci.*, 16 (10) 567 (1940)), the  
theory is derived. The formulas show a good agreement  
with practical observations. M.I.L.

PROPERTIES AND PROPERTIES INDEX

Thermal expansion of decorative glass. A. N. DAVYD.  
 Tsv. *Neklo i Keram.*, 9 [2] 13-14 (1948).—Dilatometric  
 measurements indicate that the average linear coefficient of  
 thermal expansion from 0° to 450°C. can be expressed by  
 an ordinary additive formula with the aid of the following  
 factors:

SiO <sub>2</sub>	0.1 × 10 <sup>-7</sup>	CoO	1.0 × 10 <sup>-7</sup>
B <sub>2</sub> O <sub>3</sub>	0.5	As <sub>2</sub> O <sub>3</sub>	0.8
P <sub>2</sub> O <sub>5</sub>	1.0	Al <sub>2</sub> O <sub>3</sub>	0.4
CaO	2.0	Cr <sub>2</sub> O <sub>3</sub>	1.5
ZnO	1.0	CuO	0.7
BaO	1.6	Mn <sub>2</sub> O <sub>3</sub>	0.9
PbO	1.3	SnO <sub>2</sub>	0.7
Na <sub>2</sub> O	4.4	MgO	0.7
K <sub>2</sub> O	7.0	NiO	1.0
Na <sub>2</sub> AlF <sub>6</sub>	2.2	Si <sub>3</sub> N <sub>4</sub>	1.0

The factors in the right-hand column are based on insuffi-  
 cient experimental data, but they may be used in cases  
 where the corresponding values are introduced in the glass  
 in small amounts. In addition to the ordinary additive  
 calculations, it is recommended that calculation be made  
 in conjunction with a glass of similar composition with a  
 known coefficient of thermal expansion. Thus, if the  
 original glass has a coefficient  $\alpha = 98.0 \times 10^{-7}$  and the  
 new glass differs from it by + 1% CaO, + 1% Na<sub>2</sub>O, and  
 - 2% K<sub>2</sub>O, then the coefficient of the new glass will be  $\alpha \times$   
 $10^{-7} = 98.0 + 1(2) + 1(4.4) - 2(3.0) = 97.2$ . In this  
 manner, the errors in additive formulas will be reduced to  
 a minimum.  
 B.Z.K.

ASA-SLA METALLURGICAL LITERATURE

*DAUVALTER, A. N.*

USSR/Chemistry - Glass

Card 1/1

Pub. 104 - 4/8

Authors

Dauval'ter, A. N.

Title

The structure of glass

Periodical

Stek. 1 ker. 3, 12-17, Mar 1955

Abstract

A brand new and lengthy theory relating to the structure of glass is presented. The theory is based on the contention that the forces reacting between the atoms are actually the forces of the chemical bond. The separation or absorption of the chemical bond forces in glass depends upon the relation between the internal energy of the given small part of the body and the kinetic thermal energy intended for this particular part. Both these energies in glass have a certain equilibrium and in the absence of the equilibrium the energies transform into each other. One USSR reference (1954). Graph.

Institution :

.....

Submitted :

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DAUWALTER, A. N.

Poland/Chemical Technology - Chemical Products and Their Application. Silicates.  
Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62252

Author: Dauwalter, A. N.

Institution: None

Title: Structure of Glass

Original

Periodical: Budowa szkła, Szkło i ceram., 1956, 7, No 3, 65-68; Polish

Abstract: A translation. See Referat Zhur - Khimiya, 1956, 23086

Card 1/1

DAUVAL'TER, Aleksandr Nikolayevich; KUR'YANEN, A.A., retsentsent; LYUL'YUNINA,  
V.F., nauchnyy redaktor; VARSHAVSKAYA, L.S., redaktor; MEDVEDIWA,  
L.A., tekhnicheskiiy redaktor

[Crystal, stained, and opal glass] Khrustal'nye, tsvetnye i opalovye  
stekla. Moskva, Gos.nauchno-tekhn.izd-vo M-va legkoi promyshl. SSSR,  
1957. 234 p.  
(Glass) (MIRA 10:7)

*DAUVALTER, A.N.*  
DAUVALTER, A.N.

Using sodium fluosilicate in glass manufacture. Leg.prom. 17  
no.8:23-25 Ag '57. (MIRA 10:10)  
(Glass manufacture)  
(Sodium fluosilicate)

DISQUALIFIED  
DAUVALTER, A.N.

Glassware with bilateral plating. Leg.prom.17 no.9:39-40 S '57.  
(Glassware) (MIRA 10:12)

AUTHOR: Dauval'ter, A. N.

SOV/72-58-E-5/17

TITLE: On the "Anomalous Interval" (Ob "anomal'nom intervale")

PERIODICAL: Steklo i keramika, 1958, Nr 8, pp. 12-19 (USSR)

ABSTRACT: This conception was formed in connection with the work by Tamman, who wanted to find the temperature limit which separates the solid glass from its liquid melt. He proceeded from the idea that the characteristic feature of solid glass is brittleness and of liquid glass is liquidity. He determined the temperature  $T_g$  at which on certain experimental conditions the glass shows the first signs of cracks; then he found the temperature  $T_f$  at which the first threads may be drawn out of the glass. According to the author's opinion Tamman was not right by contrasting brittleness and liquidity, as these characteristics do not exclude each other but overlap to a considerable degree. Then he criticizes in detail the assumptions of Tamman by stating that in many cases the liquidity and the viscosity contrasted to it represent characteristics of the state of the glass better suited than those of the temperatures themselves. Further investigations

Card 1/3

On the "Anomalous Interval"

SOV/ 72-58-8-5/17

showed that about between the temperatures  $T_1$  and  $T_2$  an abrupt change of the majority of characteristic features of all kinds of glass takes place. (Fig 1). It turned out that within the anomalous interval the glass properties further change in the course of time at constant temperature, among others also the viscosity as the most important characteristic feature of the glass properties. This may be seen from figure 2 which is taken from the work by A. I. Zharov. From 1942 to 1945 the author of this article carried out a number of measurements of the heat expansion of industrial glass by means of a dilatometer constructed by himself. Among others, glass in the form of a thin rod (diameter 2.5-3 mm) was heated to the temperature  $T_1$  close to  $T_2$  and maintained at this temperature until it was an equilibrium state. The sample was quickly heated to another temperature  $T_2$ , or was cooled down to it, and maintained there. As a rule it was found that the rod did not expand immediately according to the temperature but that this took a certain time. After the state of equilibrium had been reached the glass could again be brought to the original temperature  $T_1$ . By maintaining this temperature the initial dimensions of the little rod can be obtained, the cycle then being closed (Fig 3). Then

Card 2/3

On the "Anomalous Interval"

SOV/12-58-8-5/17

formulae for the calculation of this process are mentioned as well as the papers written by M. A. Bezborodov and Stozharov. In figure 4 the change of the glass volume as dependent on the temperature is shown. Fig 5 shows the course taken by the curves of expansion. The absence of equilibrium in the glass structure can be characterized by 3 values: the glass density at 20°, the cooling velocity and the structure temperature. They are described in detail. Within the anomalous interval structural changes take place, the state of equilibrium, however, is not yet reached. There are 5 figures.

1. Glass--Thermodynamic properties
2. Glass--Heating
3. Glass--Temperature factors
4. Mathematics

Card 3/3

AUTHOR: Dauval'ter, A. N.

SOV/72-58-9-4/20

TITLE: On Methods of the Computation of the Annealing Process of Glass Products (O metodakh rascheta rezhima otzhiga stekloizdeliy)

PERIODICAL: Steklo i keramika, 1958, Nr 9, pp 12 - 13 (USSR)

ABSTRACT: This is a critical review of the method advocated by V.L.Indenbom and N.I.Ananich. The author states, in contrast to assertions made by these authors, that at present a sufficient number of computation methods are available for the determination of the annealing temperatures of products of all sizes. He is of opinion, that the annealing interval of 115-130° is too great as it unnecessarily prolongs the annealing period. The choice of the span of admissible tensions for which it was proposed to extend the range of standards should be better substantiated, as these tensions would otherwise have a negative effect upon the quality of the products. The author also criticises the computation of the admissible cooling rate of which approximate values for

Card 1/2

On Methods of the Computation of the Annealing Process of Glass Products SOV/72-58-9-4/2a

glass of differing composition are given. The suggested method which is customarily only used for the determination of transient stresses (see the papers by T.N.Keshishyan, L.M.Butt, Ref 1) is by Indenbom and Ananich used for the determination of constant stresses. Thus another incorrectness is introduced into the method. The method advanced by Indenbom and Ananich can basically only be regarded as a prescription. As a conclusion the author states that in the development of accelerated annealing processes more accurate methods should be used in the individual cases, not however, accurate methods being replaced by approximation methods. There is 1 reference, 1 of which is Soviet.

ASSOCIATION: Leningradskiy zavod khudozhestvennogo stekla (Leningrad Works for Art Glass)

Card 2/2

*David L. Ter, A.N.*

**Author:** Ershov, S. E.

2/072/60/000/03/021/023  
2003/2008

**Title:** 2nd All-Union Conference on the Vitreous State

**Publication:** Steklo i keramika, 1960, No 3, pp 45-46 (USSR)

**Abstract:**

The 2nd All-Union Conference on the Vitreous State was held in Leningrad at the end of 1959. It was organized by the Institute of Chemistry of the USSR Academy of Sciences. The conference was attended by scientists from various countries, including the USSR, Poland, Czechoslovakia, and the German Democratic Republic. The main topics discussed were the structure and properties of glasses, the kinetics of vitrification, and the mechanical and physical properties of glasses. The conference was held in the city of Leningrad, which was then the capital of the USSR. The conference was held in the city of Leningrad, which was then the capital of the USSR. The conference was held in the city of Leningrad, which was then the capital of the USSR.

Card 1/8

Card 2/8

The 2nd All-Union Conference on the Vitreous State was held in Leningrad at the end of 1959. It was organized by the Institute of Chemistry of the USSR Academy of Sciences. The conference was attended by scientists from various countries, including the USSR, Poland, Czechoslovakia, and the German Democratic Republic. The main topics discussed were the structure and properties of glasses, the kinetics of vitrification, and the mechanical and physical properties of glasses. The conference was held in the city of Leningrad, which was then the capital of the USSR. The conference was held in the city of Leningrad, which was then the capital of the USSR. The conference was held in the city of Leningrad, which was then the capital of the USSR.

Card 3/8

DAUVALTER, A.

For future generations. Sov.foto 19 no.11:64 N '59.

(MIRA 13:4)  
(Photographs--Conservation and restoration)  
(Photographs on glass)

DAIWA TER, A.N.

Red, orange, and yellow opal glass. Stek. i ker. 18 no.11:23-24  
N '61. (MIRA 15:3)

(Glass, Colored)

BEREZHNOY, A.I.; BRODSKIY, Yu.A.; BRONSHTEYN, Z.I.; VEYNBERG, K.L.;  
GALDINA, N.M.; GLETMAN, B.A.; GINZBURG, D.B.; GUTOP, V.G.;  
GUREVICH, L.R.; DAUVAL'TER, A.N.; YEGOROVA, L.S.; KOTLYAR,  
A.Ye.; KUZYAK, V.A.; MAKAROV, A.V.; POLIYAK, V.V.; POPOVA,  
E.M.; PRYANISHNIKOV, V.P.; SENTRYURIN, G.G.; SIL'VESTROVICH,  
S.I., kand. tekhn. nauk, dots.; SOLOMIN, N.V.; TEMKIN, B.S.;  
TYKACHINSKIY, I.D.; SHIGAYEVA, V.F.; SHLAIN, I.B.; EL'KIND,  
G.A.[deceased]; KITAYGORODSKIY, I.I., zasl. deyatel' nauki i  
tekhniki RSFSR, doktor tekhn. nauk, prof., red.; GOMOZOVA,  
N.A., red.izd-va; KOMAROVSKAYA, L.A., tekhn. red.

[Handbook on glass manufacture] Spravochnik po proizvodstvu  
stekla. [By] A.I.Berezhnoi i dr. Pod red. I.I.Kitaigorodskogo  
i S.I.Sil'vestrovicha. Moskva, Gosstroizdat. Vol.2. 1963.  
815 p.

(MIRA 16:12)

(Glass manufacture)

DAUYETAS, M.

USSR/Forestry - Forest Crops

K.

Abs Jour : Ref Zhur + Biol., No 15, 1958, 68044

Author : Dauyetas, M.

Inst :

Title : On Securing and Afforesting the Coastal Sands of the Lithuanian SSR.

Orig Pub : Lesnoye kh-vo, 1956, No 2, 53-56.

Abstract : A brief description is given of the afforestation conditions of the Korshyu Nering sand bar where moving dunes up to 60 meters in height are still encountered. On the territory of the sand bar there are mountain and common pine crops as well as natural pine-spruce plantations of I and II qualities. Methods are described for securing the moving sands mechanically and for ameliorating them by agronomic and forestry techniques.

Card 1/1

DAUYETAS, M. S., Cand Agr Sci -- (diss) "Afforestation of the sands along the seacoast of Lithuania." Kaunas, 1960. 39 pp; (State Committee of Higher and Secondary Specialist Education of the Council of Ministers of the Lithuanian SSR, Lithuanian Agricultural Academy); 150 copies; free; (KL, 25-60, 136)

L 51527-65

SWF(m)/SWP(j)

Pg-5 RM

ACCESSION NR: AP5015314

UR/0286/65/000/009/0072/0072  
678.842

14  
B

AUTHOR: Chernyakova, A. M.; Dav, G. B.

TITLE: A method for producing a hardener and drying accelerant for organosilicon resins and resins of other types. Class 39, No. 170688

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 72

TOPIC TAGS: organosilicon resin, polyethylene, polyamine, hardening agent, drying agent

ABSTRACT: This Author's Certificate introduces a method for producing a polyethylenepolyamine-based hardener and drying accelerant for organosilicon resins and resins of other types. A more effective hardener is produced by interacting polyethylenepolyamine zinc caprolate with the application of heat.

ASSOCIATION: none

SUBMITTED: 09Jan64

ENCL: 00

SUB CODE: GC, MT

NO REF SOV: 000

OTHER: 000

Card 1/1 *LS*

DAV, V.N.

Outcrop of Silurian formation in the Yeyka Valley of the central  
Tunguska Basin. Mat. VSEGEI no.7:234-236 '55. (MLBA 10:4)  
(Yeyka Valley--Geology, Stratigraphic)

DAV, V.N.

Materials on the geology and petrography of the Obrub apatite  
deposit. Trudy Lab. geol. dokem. no.8:353-369 '59.

(Khamar-Daban ridge--Apatite) (MIRA 12:10)

DAVA, Norov

Use of hexachlorane aerosol in the control of epizootic outbreaks  
of plague in the Mongolian People's Republic. Izv. Irk. gos. nauch.-  
issl. protivopchum. inst. 21:351-355 '59. (MIRA 14:1)  
(MONGOLIA PLAGUE) (AEROSOLS)  
(BENZENE HEXACHLORIDE)

DAV, Z.I., inzh.

Study of an artificial cooling process of solid concrete under natural conditions in the construction of the dams of the Bratsk Hydroelectric Power Station. Energ.stroi. no.30:54-60 '62.

(MIRA 16:2)

1. Nauchno-issledovatel'skaya stantsiya Moskovskogo filiala Vsesoyuznogo instituta po proyektirovaniyu organizatsiy energeticheskogo stroitel'stva.

(Bratsk Hydroelectric Power Station) (Concrete construction)